An Intelligent Thermal-Aware Task Scheduler in Multiprocessor System on a Chip

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Abstract : Multiprocessors Systems-On-Chips (MPSOCs) are used widely on modern computers to execute sophisticated software and applications. These systems include different processors for distinct aims. Most of the proposed task schedulers attempt to improve energy consumption. In some schedulers, the processor's temperature is considered to increase the system's reliability and performance. In this research, we have proposed a new method for thermal-aware task scheduling which is based on an artificial neural network (ANN). This method enables us to consider a variety of factors in the scheduling process. Some factors like ambient temperature, season (which is important for some embedded systems), speed of the processor, computing type of tasks and have a complex relationship with the final temperature of the system. This Issue can be solved using a machine learning algorithm. Another point is that our solution makes the system intelligent So that It can be adaptive. We have also shown that the computational complexity of the proposed method is cheap. As a consequence, It is also suitable for battery-powered systems.